

15.301/310, Managerial Psychology  
Prof. Dan Ariely  
**Lecture 8: The Psychology of Money**

Welcome to the most exiting class so far  
Focus on one research project today  
We are talking about the psychology of money.

Generally, how do we decide, when we go to ABP if we should pay 2.79 for coffee?  
Everyone here has bought coffee before?  
How do we decide if it is worth it or not?  
When were you last in a coffee shop?  
-a week ago  
Okay, so we go up to the counter, look at the coffee menu, what were you thinking?  
-sugar in coffee  
Want sugar in coffee, that's free, what else?  
-flavored, caramel  
Okay, so we're talking 5.25. How do you decide if you want it or not?  
-how much money in pocket  
Let's say you just got paid, lots of money in pocket  
Does it make a difference?

How do we make that decision?

In theory, we are supposed to be able to evaluate how pleasurable something is for us.  
Cup of coffee, trip to Jamaica, whatever it is.  
Somewhere in our brain, imagine 0-100, how happy it makes us, map to money  
We can say, oh, this makes me happy .35. is that worth \$2 or \$3?  
Have this meter, in theory. Is it worth that? Then we decide to buy this thing or not.  
The thing to understand is that we can decide to change how much we want coffee every minute. Give us very diff level of pleasure in the morning, in the evening, when hungry, when thirsty, when tired, when not. That's fine. But every moment, we are supposed to be able to map to how much we pay  
In theory, If internal value higher than price, we buy. If lower than the price, we don't buy

How much pleasure seems very hard

Idea of internal understanding of amount of pleasure is called Fundamental Values  
Basic encoding of some quality that we understand deeply and can evaluate internally how much value it gives  
However, it's very hard to measure fundamental values. How do we measure?  
-relative, Mercedes better than Ford  
Ok, you like one car more than another  
Change price of cigarettes, gas, see if consumption goes down. Change level of access and see how people change their minds. Can do all these relative things. But hard to evaluate absolute level, measure

Maybe one day, direct brain connection, give us amount of activity in cell and give us exact level of pleasure.

Both cases what we do is we don't have absolute levels, we have relative tests  
And relative tests fit with the idea of fundamental values, and therefore we say it's possible we have fundamental values.  
For example, if we double the price of cigarettes, consumption goes down, fits with idea of fundamental values  
Increase price enough, drop smoking altogether

Psychological perspective on preference  
Fundamental values is one way to think about preferences  
Remember when we talked about listing Multiple reasons why love our SO?  
That indicated that people don't know their preferences, right? That it's easy to confuse them.

An experiment  
Had roulette wheel, spun the roulette wheel, came up with a number. 74. Then they asked, are there more or less nations in the UN than 74?

-less  
How many nations are there in the UN?  
-50  
And it showed that people who got high numbers, gave high numbers.  
People who got low numbers gave smaller  
Use the number to decide how many nations are in the UN  
Context effect

2 weeks ago we talked about  
Asymmetric dominance  
Compromise effect

All those things show people have imperfect comprehension of their own values  
How do these things fit together?  
Economics predicts the fundamental values, psychology tells us we have very fuzzy preferences.

(Sound)  
How much would I need to pay you to listen to this sound for 1 min?  
Write down a number.  
Now this sound is very simple. You all know what it's like, right? I don't need to play it again, it is clear to you, you know what it is. You don't need any more new information.  
So let's get some numbers.  
10, .10, 1, 2, 1, 2, 10 dollars

As you can see, there's a big variance in how much people want to do this. It was what, 10 cents to 10 dollars.

Say I sold can of coke,. I have a can of diet coke here,  
What is max you would pay for it?  
\$1, 2, .01, 0, 0

Except for the difficult people here who don't like diet coke, or don't like coke, or don't like the question. Otherwise the price you'd pay is what its worth. The variance on the annoying sound is going to be very high because it's very hard to know how much you want to listen.

For coke, variance small -\$0.50 to \$2 for people who like Coke  
We run into problems because everyone does not like Coke, but this is assuming everyone likes it.

One of the questions we'd like to ask is how come there is so much variability in the valuation of the sound, and how come there is such a low variability in the valuation of diet coke?

The suggestion here is we have no idea how much we like diet coke. But somebody told us once how much diet coke costs and we paid what people told us we should pay for it.

When we buy things in the market, we don't buy them based on what we like and what we don't like or how much we like it, we buy them based what someone told us we should pay for it.

That's what its suggesting, when somebody sold you Coke, they could have charged you \$10 for it, and then you could pay \$1 a can for wine. Diet coke could be more expensive than wine.

Why are the sounds so difficult compared to chocolate or Coke or other things?

Present another intuition

If I ask you right now, what would you prefer to have,  
Godiva chocolate or ice cream?  
A choice that you can seemingly easily make.  
Anyone have hard decision? No

On the other hand if I say, given this piece of  
Godiva chocolate, give detailed description, what is the maximum amount of money you are willing to pay for it? Is it an easy decision or a hard decision? Much harder, right?  
We can decide if we want chocolate or ice cream much more easily than we can say what is the maximum amount we are willing to pay for a piece of chocolate.  
The argument is that it is hard to map hedonic pleasure to money  
But when have two things next to each other, two goods, we can decide which one we like more.

What I presented so far

In economics, we have a theory of fundamental values. A theory that people would know how much they value things.

Psychology says that people have fuzzy preferences, they don't really know what they want.

These are 2 very opposing theories. The intuition is, it's very hard to take an experience and decide how much I'm going to pay for it.

When we look at the marketplace, behavior is predictable

If we went tomorrow and we increased taxes on cigarettes, or we decreased taxes on alcohol, we know what would happen to consumption. So a big part of the riddle is how do all these 4 things happen in parallel? Or do they? In particular, how can it be that there are fuzzy preferences in psychology, that it's hard to map money to pleasure, but nevertheless, it looks like the market is a predictable marketplace.

If you are an economist at this point, you would say, I don't understand it, how can you say people don't know preferences for products, look at the marketplace, I can predict it. I can predict that if tomorrow, the price of beer suddenly is divided in half, there are many more people who would buy it. So how can you say that people don't know how much they are willing to pay?

Should know how much value (economics)

Psychology – fuzzy preferences

Intuition – hard to map to \$

Market – behavior predictable

I can predict market, how can you say people not know how much willing to pay?

But I would say this will still happen, even with fuzzy preferences and even with difficulty mapping money to pleasure.

So let me start by giving you an example of an experiment.

Min \$ to pay, do diff things (slide graph)

The reason I chose those is they are all things you can imagine to about the same degree. Aside from kill a mouse, they were more or less as pleasurable as each other

Four don't have a market. Unlike a can of Coke, painting your face blue or smelling shoes, there's no job like that, no job description or title, recruiting procedure that does this job.

On the other hand these three, walking dog, shining shoes, deliver newspaper, are jobs people have and many people have experienced

What they do is guess the value

Prediction is that things w/o market, the variation would be very large. People don't have a market price to use as a reference

For things that have a reference, the value would be much tighter, because instead of using their own pleasure for it, people will use the market price.

Now it turns out I made quite a few big mistakes in this design.

The first one was the assumption of the jobs on the market.

Turns out there is a job to smell shoes.

Competition for the smelliest shoes, (slide, winner)

Anyway, most people didn't know there was a job like this.

Results(graph)

What happened here is that the variance for jobs that do have a market is very small

Things w/o market, variance is huge

We try to use our pleasure, but it is very, very hard to do.

Real experiments

In the first experiment, here is the problem:

Brought People to lab (MIT undergrads, MBA students, recruiters)

Listen to sound in headphones, then divide to 3 groups

Some asked nothing

Some, Hypothetically, willing to listen to sound for .10

3<sup>rd</sup> group, hypothetically, before continue, listen again for .50?

End, had a marketplace, people bid for real for 9 sounds. Had sounds 10s long, 30s long, 60s long

Procedure:

2<sup>nd</sup> price auction

Who has been on Ebay, raise your hand.

2<sup>nd</sup> price auction: if you and I are bidding for this lovely thing, you think it's worth \$10 and I think it's worth \$3

In regular, English ascending auction, I would bid 1, you 2, I 3, you 4, and the auction would be over. But both bid a lot of times

2<sup>nd</sup> price auction

Not bid up,

You say 10, I say 3, you pay a bit over 3. doesn't matter how high you bid.

That's what Ebay is using.

Procedure

Computer generates random number. If your bid is less, you listen to the sound and get paid what the computer came up with. Best strategy is to say exactly what you are willing to pay

Here some results:

Slide \$ linearly increases w/ duration.

Average, people wanted about 4x more for 60s sound than 10s sound, 2.5x for 30s and so on

Look at picture, this is the kind of world we have. The more the rate is, the more people want, and it doesn't seem to matter what position people are in. However, remember, we are only looking at relative numbers. 60/10, 60/30, and so on. In real life, we rarely have a way to look at absolute numbers. Everything we do is just relative. But if we look at absolute numbers, here is what happens:

People who we asked ? about a lot of \$ wanted a lot

People less money, asked for less

Not asked were the lowest rates.

This is saying that the initial question you ask people, would you be willing to pay x, influenced their prices long term.

Think about it, it suggests we don't really know how much we are willing to pay for things. And answering a question about our willingness to pay might fundamentally change how much we are really willing to pay later on.

If people start answering questions, they answer other questions in a coherent way, but we perceive the price as up or down.

If 1<sup>st</sup> cup coffee from Dunkin Donuts 20 yrs ago, you say oh my goodness, should I pay .25 small or .35 large?

But if you are used to the Starbucks world, you are asking yourself, should I pay \$3.50 for the small or \$4.50 for the large? People are not coherent as to the actual value of coffee to them, it is not clearly there

Even if I take another 100 cups, next month

Not clear I will understand better next week after buy many more cups, what is the actual value of coffee to me. What is the pleasure that I get from it?

The category is very important, once we decide on something, other decisions follow in a coherent manner.

So you might say Annoying sound is an odd product, maybe different

So we took MBA students, gave them these 6 products (slide). We didn't tell them how much the wine costs, we just gave them the description.

Then asked, Last 2 digits of Social Security#

-04

04 translates into \$4, ask if willing to pay that much for each of these products. And we said, just to be clear, that SS#'s are completely randomly assigned. After that, they bid for each of those products

So what we see here (slide) is people with low numbers, middle numbers, high numbers. For example, People with high SS# will pay twice as much for the trackball.

For the other ones, it was always at least 1.5x the price  
Now I know what you're thinking, because I have high SS#, I probably go and pay too much for everything I buy. That is not the case, it would only be the case if you ask yourself questions like, should I pay for this item the ending of my SS#?

Suggests people make foolish, irrelevant decisions about paying their SS#, then influences willingness to pay in buying products  
Still, there was a high dependency.

Everybody locally very coherent – pay more exp wine than cheap, etc  
And you can think about that with other products and ask, how did I end up paying this amount? Clothes, for example. How do we decide? Clothes have huge variance in prices. Some people spend on their whole wardrobe \$17, some people spend thousands of dollars. From the looks, you all fall in the lower category. [laughter]  
And I am too [more laughter].

How does a one time decision on initial amount you are willing to pay for something make a difference in all these other decisions

For me, spending 50 on a pair of trousers seems crazy, but not someone else, might be cheap – what you are used to

Could be not a question of value, but what we are used to doing.

So there is a theory that people don't know how to value things for themselves  
First became popular by the famous philosopher Mark Twain.  
Anybody not read Tom Sawyer? You have to read it, it is a great book.

Mark Twain – tom Sawyer

Tom caught by Aunt Polly for doing something.

Must whitewash fence

Friend comes, poor Tom Sawyer

He says nothing, friends say poor Tom Sawyer, have to spend Sunday washing the fence.

He says poor Tom Sawyer, what do you mean? It's not every day a kid gets to paint a fence. Besides, Aunt Polly is very particular, she wouldn't just give this to any kid.

Friends ask to paint just a little, Tom says, nope, Aunt Polly is very particular.

His friends not only begged him to paint the fence, which he let them btw, they paid to paint fence. He became a wealthy kid at the end of the day

Ends chapter – if Tom wise as author – he would realize pleasure not in the act itself, but if get paid or pay to do it

In fact, wealthy people in England ride in carriages with horses long distances in sun and rain because they say it gives them great pleasure. But if you paid them 3 pence, they would stop immediately.

So Mark Twain suggest we don't really know whether things are pleasurable, and sometimes, if we pay to do something we think it's pleasurable and if we are paid to do something, we think it's awful

So I tested this. We've done about 8, 9 experiments with this. Some of them were in 15.301.

poetry(slide)

would come to class, read leaves of grass Walt Whitman, then tell poetry recitals

1min, 5min, 10min

But small room, not space for everybody, so auction spaces

Fill out forms to bid

½ people asked before bidding, hypothetically, would you pay \$10 to listen to Prof.

Ariely recite poetry for 10 min

I think it was 2% took it

Other half, before continuing hypothetically tell us if you would be willing to accept \$10 to listen to prof. Ariely recite

Most said yes.

Results (graph slide)

people asked willing to pay, pay more for longer readings

asked get paid, charge us more for longer

everyone sure more is more.

But here's what happened, nobody knows if listening to me recite poetry is pleasurable or painful.

Can easily switch people around zero by asking the right question, and then everyone goes in a coherent fashion from there.

Hard to determine painful or pleasurable. And so paying or getting paid to do something can determine that.

So are museums painful or pleasurable?

If we were paid to go, we would probably go even less.

We can also think about how

Moving hobby to profession can fundamentally change your enjoyment of it.

-switch paid/paying for poetry make diff?

First impression

Free poetry after answer either question, and see who comes. And many more people who would pay for it came

I've done the same thing with experiments on decision making.

Turns out, don't have to pay people to come to experiments, Can get people to pay for experiment. In fact, people will pay more for longer experiments. if ask initial ?s correctly

If you pay to come to class, pay to do exp, not clear which is more valuable to you, or to us.

Not about how much enjoy, how valuable they are

Someone figured out

Pay good money to go to prison for a month, and they are willing to pay for this privilege. The thing about this it is something we put a lot of effort into to try to avoid.

Other things like that

How about public talk? Is it pleasurable or painful? Most people fear giving public talks very much. They think of it as a very unpleasant experience.

### **Self Herding Model**

Restaurant, people in line, think good, more people line up, think better and better

People assume people in front know more

w/o carry more info

when you see one line 1, one line 100, you assume 100 is much more positive, but doesn't have to be

same happen to you

go to Starbucks, buy coffee 1<sup>st</sup> time

week later, what remember? Thirsty? Tired?

probably not, just remember there, buy coffee

let me buy again

oh, I bought twice, I like it, keep buying

oh, I am a loyal Starbucks fan

habit, no longer consider

more behavior, more powerful

correct locally, but not rethink problem

oh, just said more than 50 in UN, stay with that but change a little

how use in marketplace?

-encourage customers to linger

Create herding.

-free coupons handed out, get process started

Free coffee, next time remember buy

Or maybe reduced price, if free you don't really buy it

-create association with something else

I say specifically about price, get people to pay more

-start high price, then lower it a little

More successful start 100 raise to 250 vs start 1000, lower to 250?

1<sup>st</sup> time think about product, associate price. Could call on phone, say what do you think of Tivo for 1000?

Tivo

1<sup>st</sup> price at introduction very important

-sneakers increase \$

Changed dramatically in 50 yrs

From \$20 to \$60, 70

Collectors' items, fashion, are things that people can charge a lot for and increase price

Not same as increase price for same thing

Scarcity, people willing to pay more

experiment

people say "market will take care of it"

Lowest 3 bids get sound, pay 4<sup>th</sup> bid price

People w/ hypothetical ? about \$1 wanted much more than .10

Cheap for us when we said .10

This much more exp, .50 per trial

Look at standard deviation of how much people want to be paid – shrunk over time

Each group converge to own level

People high learned market was high, people low learned market was low

Similar study –people who moved to Pittsburg, willing to pay for housing.

Influenced by place coming from?

Looked at from expensive like Boston, NY, from cheap like Ohio, Missouri

Yes. Depends on what used to paying. Can correct for income, etc

You can find out easily on the web what the market is

But from NY willing to pay much more than people from Ohio

Anchoring

If rented couple years, used to new level of spending, effect went away

Not clear how effects true preferences.

Experiment 4

Look at Value of 1<sup>st</sup> anchor

Theory of

1<sup>st</sup> decision makes a big diff  
Want to check that

In addition, 2 other explanations  
I am a subject, I don't know anything vs smart, wise experimenter  
If asking question about .50, probably about right. Let me respect his knowledge

People who give sounds higher price, find them more painful.  
Influence how perceive sound?

The experiment:

People came, listen to sound. Then Hypothetical ? about .10 or .90, bid for real  
Went back, new sound, different kind, white noise, asked about .50, bid real  
3<sup>rd</sup> round, diff sound, asked opposite ? .10 or .90  
Crunch finger in carpenter's vice for 30 sec

Reason for vice – mapping vs changing utility

Finger crunched vs hearing sound, direct tradeoff w/o money  
Asked which prefer, finger crunched again or sound again?  
If change, diff in preference between 2 groups, one prefer vice, other sound.  
If pricing not effect perception of sound, no difference in preferences

Biggest effect –  
1 decision more force than later decisions  
.90 stayed higher price  
No effect vice/sound choice.  
Suggests people want more money for sound not experience it as worse  
Could be other reasons  
Another exp to look into this

What is the theory here?  
Traditional view – some tradeoff, more duration, more \$ want, different people different tradeoffs  
Perspective here – people have big uncertainty – not know value of sound

What happens,  
Answer question in one range of uncertainty vs other,  
Next time think about it, constrained by the .50  
Shrink area of acceptable tradeoffs

Lab experiment – 4 stimuli  
9v battery shock  
½ vinegar/ Orange Juice  
Spoon butter

Lemonade in bedpan

Not drink it, change things

Pairwise preferences, or no measurement

4 pairs yes/no, would take, say \$4 to drink from bedpan, then bid for real

Wanted to know – successful in anchoring?

Anchor 4 separately, or all stay same w/ 1<sup>st</sup> anchor?

Important not only for experiment, but also think about how people anchor in life

Pay laundry what used to pay for laundry, shoes for shoes, clothes for clothes

Have all different silos at same time.

Results

Successfully anchored different stimuli separately

However

When looked at ratio anchor \$/pref, no effect

Can mess up willing to pay, but not direct comparisons.

Willing to pay not predictor of liking

Can mess mapping pleasure, willingness to pay

People not map well

Some people are better than others – who better able to map?

-more creative

No

-have less money

Almost. People who work on hourly wages

Hard to think about money

Is this worth working 10 min for? – better able to compare

People w/ hourly wages, Common denominator more meaningful than money

Summary

Economic theory not work well here

Not really know how much willing to pay

Map money to pleasure

Also learned can have these effects simultaneously

have stable market,

people act as if coherent

If predicting for market, can predict well

For new product, much harder

If tomorrow, double price of milk, ½ Alcohol, people very happy☺

But if born to world like this...

Local changes very sensitive to, but not absolute price

But if born into world – not clear would change much

Implications

Stock market behaves rational – up, down with news

What does value of stock market really reflect?

Labor market

Look at unionized companies, lower supply, demand. Know about other people

Isolated island, much more arbitrary

You know what makes happy w/ salary? What biggest determiner of happiness w/ salary?

-getting raise

-friends make

-coworkers

Men, women its more complex, but for men it is how much wife's sister's husband makes

Telling you this – think about how much happiness gain by marrying strategically

Want to marry woman who's sister married to bum

(laughter)

Anyway, people concerned about how much paid compared to others. Friends, ...

One guy work for Investment co

Think about changing policy

All salaries in one database

Terrified of leak

We had inside trading before, etc, but if all brokers find out how much each other make, will be a riot

I think he's right

Unhappy people by one time publishing data

Everybody leave the company

New Yorker cartoon

All about relative wealth

Say we are planning to hit a gas station tonight  
How much money you think at gas station? \$5000?  
How much you think we'll get caught?  
-depends on weapons  
No weapons  
Think about \$, danger, is it worth it?  
Not usually the way criminals think  
Not think this vs nothing, instead should we rob a gas station or LaVerde's? (laughter)  
Compare what happened month ago  
Over time, crime goes up  
Do something  
Policy working, but only for short time

1 more thing

Joke

Jewish Barber to new town, Polish kids  
Rocks at window  
Say thanks, pays them  
Again, business good, pays more  
Again, business bad, sorry can't pay  
Kids - Think we do for no payment? Forget it

Next monday assignment due, survey  
Asked to interview 25 working people, answer survey  
Enter data into spreadsheet, send to TA  
Bring it all together  
Will be asked about data in final.

Last time – class evaluations

I have learned – some happier than others

People want Lecture notes, find less people to class, not take notes  
You think bad? People 2 yrs ago terrible on exam  
When people think notes available, they don't pay attention  
I will post notes right before exam

Assignments not clear  
Lecture cover many topics, not many links  
True

Trying to give little things might be important, can go look for those you are interested in  
Might be more systematic in the future  
Readings not linked in lectures – not enough time to cover everything  
Otherwise, not cover

Not enough work but too much reading???

Will post lecture notes, if not clear, ask  
Case – important for management

One thing that annoys me:  
People come late, drifting in  
Many classes, want to start w/ something in beg, but know can't

Take notes, come on time

Experiment friday